

Date: Wed, 30 Mar 94 04:30:32 PST
From: Ham-Equip Mailing List and Newsgroup <ham-equip@ucsd.edu>
Errors-To: Ham-Equip-Errors@UCSD.Edu
Reply-To: Ham-Equip@UCSD.Edu
Precedence: Bulk
Subject: Ham-Equip Digest V94 #85
To: Ham-Equip

Ham-Equip Digest Wed, 30 Mar 94 Volume 94 : Issue 85

Today's Topics:

 Alinco DR-600 impressions?
 FT-530 MOTD (Measurement of the Day -- Intermod!
 Heathkit HD-15 Phonepatch
 Kenwood TM-733A & AIP
 Marine Ham set recommendations
 RF and AF speech processors. Was: FT-990 vs TS-850

Send Replies or notes for publication to: <Ham-Equip@UCSD.Edu>
Send subscription requests to: <Ham-Equip-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Equip Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-equip".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 30 Mar 94 04:29:39 GMT
From: sdd.hp.com!think.com!spdcc!russell@hplabs.hp.com
Subject: Alinco DR-600 impressions?
To: ham-equip@ucsd.edu

I'm considering upgrading my dualband mobile in my car to an Alinco
DR-600, both for the DTMF remote features and for the remote head support,
because my Toyota doesn't have much room for radio mounting.

I'd like to get DR-600 users' impressions of the unit. I've heard
mutterings on packet of a "stuttering" problem on the UHF side, but I've
also heard that Alinco has been responsive in fixing that, so I'm not too
worried. I currently have a DR-510, an older dual-bander, that is a
great radio.

So, please help, and email your impressions as I don't get to read
as often as I'd like. I'll summarize to the net.

Thanks and 73,

Tim Russell, N0ZHY, russell@spdcc.com

--

Tim Russell n0zhy@wd0har.#ene.ne.us.na russell@spdcc.com
Most people would rather have comfort than freedom. The paradox is that you
can't really have the former, in the long term, unless you have the latter.
-- Amanda Walker

Date: 29 Mar 94 02:58:46 GMT
From: dog.ee.lbl.gov!agate!kabuki.EECS.Berkeley.EDU!kennish@ucbvax.berkeley.edu
Subject: FT-530 MOTD (Measurement of the Day -- Intermod!
To: ham-equip@ucsd.edu

OK, UHF measurements for sensitivity and intermod....

Raw F3E sensitivity (opens squelch set at threshold):

UHF receiver (right side):

Freq (MHz) Pin (dBm)

300	-83
315	-96
330	-105
345	-111
360	-117
375	-122
390	-122
405	-121
430	-122
445	-122
460	-120
475	-119
490	-115
500	-114

VHF receiver (left side):

PLL does not lock for 300 MHz:

Freq (MHz) Pin (dBm)

300 x

315	-74
330	-74
345	-77
360	-71
375	-84
390	-100
405	-100
430	-118
445	-122
460	-115
475	-105
490	-104
500	-104

TTID (Twin Tone Intermod)

f1 = 445 MHz, f2 = 446 MHz, tune 447 MHz for 3rd IM:

breaks squelch at -66 dBm on UHF side, -69 dBm on VHF side.

f1 = 475 MHz, f2 = 460 MHz, tune 445 MHz for 3rd IM:

breaks squelch at -59 dBm. NO VHF side measurement (sorry).

What this means: For best IM rejection, listen to UHF on the VHF side! As advertised in the manual, cross band RX has a narrower range, and hence better out of ham band IM rejection. Didn't test this on the bench, sorry, but remember that 1 dB of RF attenuation drops the 3rd IM products by 3dB.....

More numbers when I have time, next will be VHF sensitivity and IM rejection, followed by UHF+ (800 MHz) measurements.

People that are dying for a particular measurement can mail me and I will try to set it up.

-Ken

p.s for those that must know, my FT-530 has the Jumper 13 mods done, and the serial number begins with 3D131...

Date: Tue, 29 Mar 1994 18:06:15 GMT
From: envoy!jim@uunet.uu.net
Subject: Heathkit HD-15 Phonepatch
To: ham-equip@ucsd.edu

I am looking for comments on the the Heathkit HD-15 phonepatch. Is this a pretty good unit? Any know flaws, or recommended modifications? How difficult is it to install and get working? Also, I would like to get a photo copy of a manual; I'll pay shipping and copying cost if some one would be willing to do this for me. Thanks.

Jim Mueller | Work : (702) 689-3111 | jim@shadow.scs.unr.edu
11865 Deodar Way | Home : (702) 677-2775 | WB7AUE@KE7KD.#NONEV.NV.USA.NOAM
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Date: 30 Mar 94 02:41:38 GMT
From: sdd.hp.com!col.hp.com!bobw@hplabs.hp.com
Subject: Kenwood TM-733A & AIP
To: ham-equip@ucsd.edu

Bob Albert (bob.albert@ledge.com) wrote:

: I don't know what Kenwood is talking about with Advanced Intercept
: Point, but it seems to be a way of saying they have improved the
: intermodulation performance of the receiver. The intercept point is
: one way of measuring intermodulation sensitivity of a receiver.

OK, thanks. I understand the concept of intercept point as it relates to intermod. There was some speculation that they improved the intercept point by simply applying attenuation, which would, of course, degrade the sensitivity.

Bob Witte / bobw@col.hp.com / Hewlett Packard PMO / KB0CY / (719) 590-3230

Date: Tue, 29 Mar 1994 15:48:54 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!howland.reston.ans.net!pipex!sunic!
psinntp!psinntp!bnlux1.bnl.gov!sirius.ccd.bnl.gov!gc@network.ucsd.edu
Subject: Marine Ham set recommendations
To: ham-equip@ucsd.edu

I am busy getting my code back up to speed (I had a license about 40 years ago).
I want
to install a HF ham rig on my boat for long distance communications. I am asking
for
recommendations. My first priority is reliability and longevity in a marine
environment.

--

Graham
gc@bnl.gov

Date: Tue, 29 Mar 1994 14:34:44 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!howland.reston.ans.net!
europa.eng.gtefsd.com!emory!wa4mei!ke4zv!gary@network.ucsd.edu
Subject: RF and AF speech processors. Was: FT-990 vs TS-850
To: ham-equip@ucsd.edu

In article <CnE4xu.I03@srngenprp.sr.hp.com> alanb@sr.hp.com (Alan Bloom) writes:
>Gary Coffman (gary@ke4zv.atl.ga.us) wrote:
>: In article <Cn8Los.3Ln@srngenprp.sr.hp.com> alanb@sr.hp.com (Alan Bloom) writes:
>: >Gary Coffman (gary@ke4zv.atl.ga.us) wrote:
>: >
>: >: Phffffff! The phase flatness through the audio phase shift networks
>: >: used in amateur phasing SSB rigs was much worse than any phase
>: >: distortion in a filter rig. The audio phasing network had to cover
>: >: octaves while the crystal filter only has to work over a tiny fraction
>: >: of an octave.
>: >
>: >Not true. A phasing-type SSB generator specifically depends on a
>: >90 degree phase difference between the two channels. If the phase
>: >flatness were bad, you would get terrible unwanted sideband supression.
>
>: No. Phasing exciters depend on *quadrature* at a given frequency to
>: achieve SSB.
>
>*Sigh* Here we go again...
>
>"Quadrature" means exactly what I said above, a 90 degree phase difference.

I know that. I'm not arguing with you, just introducing an alternate
term for the I and Q channel phase relationship. Where I am arguing
with you is on a slightly subtle point. See below.

>: There must be a net 90 degree difference *at any given
>: frequency*, but the phase at say 300 Hz vis 3000 Hz is irrelevant

>: to the SSB generation, but not to the sound.

>

>True, but the way 90-degree phase shift networks work is to generate
>two signals with phases that ramp linearly with frequency, but always
>90 degrees out of phase. If the ramps weren't smooth, the phase
>difference wouldn't be 90 degrees.

Now this is where we differ. What's important to phasing SSB is that
 $I - Q = 90$ degrees at each given frequency. You can have that with
an irregular frequency response as easily as you can with a smooth
declining ramp. What I'm talking about is the phase relationship
between different frequency components of the waveform. Let's assume that
we have two frequencies X and Y. They will have a phase relationship at
input defined as,

$$X(t) - Y(t) = K(t)$$

Now if we put this through a transmission media, a blackbox
network we'll call B, then the following condition must apply
if the phase relationship of the complex waveform is to be
maintained.

$$B(X)(t) - B(Y)(t) = K(t)$$

But that's not the response we get with a first order smooth
RC network with a declining linear phase delay versus frequency.
I and Q have to have a 90 degree difference, but that can be
generated a number of different ways. We can add delay in one
branch only, so $I' = I$ and $Q' = Q + 90$. Or we can use lead/lag
networks so that $I' = I + 45$ and $Q' = Q - 45$. Or any mixture
in between. All the SSB phasing network cares about is that
there's quadrature at each given frequency. How each frequency
gets quadrature is irrelevant to the phasing exciter, but it's
not irrelevant to the resulting differential phase between two
frequency components of the input.

>: Ask yourself how many

>: milliseconds is a 90 degree phase delay at 300 Hz, then ask yourself

>: how many at 3000 Hz. ...

>

>That's why there is less phase shift at 300 Hz than 3000 Hz (phase ramps
>linearly with frequency, see above.) Linear phase = constant group delay.

I don't see what you're saying here. You need quadrature at every different
frequency, at 300 Hz and at 3000 Hz. The phase shift has to be the *same*
at every frequency (90 degrees), but that means the *delay* declines with
increasing frequency since it takes less delay to get 90 degrees of phase
shift at 3000 Hz than it does at 300 Hz. In other words, the high frequency

components start to outrun the low frequency components as they go through the network because they suffer less delay. That can be seen in a television system as chroma/luminance misregistration, also known as differential phase distortion. Such delay characteristics aren't easily visible in complex audio waveforms with ordinary scopes, but it certainly can be heard. That's the click-boom effect I mentioned in the first post where a percussive strike's high frequency components have outrun the low frequency components.

>: >Same thing with amplitude flatness. The phase shift network's two
>: >channels must be matched to within a fraction of a dB to get good sideband
>: >suppression.
>
>: Same thing with amplitude flatness. The amplitude has to match *at
>: a given frequency* ...
>
>Again, the way to get amplitude matching is to make both channels flat.

It's *a* way to do that, but it's not necessary, or likely in real circuits. All that's necessary for the SSB phasing exciter is that I and Q have the same amplitude at any given frequency. There could be many db of amplitude difference between two different frequencies in either the I or Q channel as long as the same difference exists in the complementary channel at that frequency. In other words, the bandpass amplitude response could be very lumpy as long as the lumps in both I and Q match. In fact, with a first order RC network, the response is going to change by 3 db per octave.

>: >A typical SSB crystal filter has a couple dB peak-to-peak ripple across
>: >the passband with similar ripples in the group delay. It is easy to
>: >do much better than that with a phasing-type exciter.
>
>: How much time is a few degrees of phase shift at 9 MHz? How much effect
>: does that have on a 300 Hz waveform? One 9 millionth of a second is a
>: mighty small phase shift at 300 Hz.
>
>Doesn't matter -- the delay through a filter depends on the bandwidth,
>not the center frequency. For example, if you built a 9 MHz crystal
>filter with a fraction of a Hz bandwidth, you would have SECONDS of
>delay through the filter. A 9 MHz SSB filter will have similar group
>delay as an audio filter of similar bandwidth and rolloff characteristics.

I've been scratching my head over this. Since the percentage bandwidth at 9 MHz is so small, the Q has to be much higher which translates into more filter ringing than in the very broad percentage bandwidth AF delay network. But it seems to me that the differential delay of the lower Q audio filter would be greater since the delta time span for a 90 degree phase shift is so much greater for a 5 octave span than for a fraction of an octave span.

Perhaps they equate to the same percentage distortion, but is it the same
kind of distortion?

Gary

--

Gary Coffman KE4ZV		You make it,		gatech!wa4mei!ke4zv!gary
Destructive Testing Systems		we break it.		uunet!rsiatl!ke4zv!gary
534 Shannon Way		Guaranteed!		emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244				

Date: 29 Mar 1994 15:07:57 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!howland.reston.ans.net!wupost!
crcnis1.unl.edu!unlinfo.unl.edu!gbrown@network.ucsd.edu
To: ham-equip@ucsd.edu

References <2n72fs\$r0m@crcnis1.unl.edu>, <2n86og\$3jp@crcnis1.unl.edu>,
<2n8h7b\$nvh@gaia.ucs.orst.edu>
Subject : Re: Kenwood a Radio, or Cult Group ???

Ray, Ray, take it easy! I was just joking! "This dude" and "him" as
you call me, loves Kenwood equipment! Sorry to confuse you with
humor. Geez! Maybe it IS a cult!!! :-) :-) :-) SK!

Greg

Date: 29 Mar 1994 16:09:04 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!howland.reston.ans.net!usc!nic-
nac.CSU.net!news.Cerritos.edu!news.Arizona.EDU!nelson.as.arizona.edu!
hlester@network.ucsd.edu
To: ham-equip@ucsd.edu

References <2n86og\$3jp@crcnis1.unl.edu>, <2n8h7b\$nvh@gaia.ucs.orst.edu>,
<2n9g8d\$9su@crcnis1.unl.edu>CSU.ne
Subject : WARC Bands for Ts-520S?

Does anyone know how to modify (and/or are there mods available for) the Kenwood
TS-520S to operate in the so-called WARC bands?

Howard KE7QJ hlester@as.arizona.edu

End of Ham-Equip Digest V94 #85
